

Remarks

Applicants wish to thank the Examiner for the helpful interview held on April 15, 2004. During the interview, the various enablement and obviousness rejections were discussed. Applicants agreed to file an RCE and to make various claim amendments to further prosecution, and also to prepare a Declaration under 37 C.F.R. § 1.132 and submit the Declaration under separate cover.

The specification has been amended to correct typographical errors, and the amendments do not add new matter. The Abstract has been amended to replace a compound from the listed compounds with another compound from the specification. The citation in paragraph 004 has been clarified. The ring system in paragraph 0073 has been clarified. Because it would be impossible to have a [3.3.2] nonane (i.e., a [3.2.2] ring system would be a decane), it is both clear, and consistent with the other examples, that the compound is properly referred to as a [3.3.1] nonane.

The claims have been amended, as suggested by the Examiner, to specify that the heterocyclic groups are selected from the group consisting of tetrahydrofuranyl, tetrahydropyranyl, tetrahydrothienyl, tetrahydrothiopyranyl, pyrrolidinyl, and piperidinyl. Support for this amendment is found at least in paragraph 0018. Dependent claims 6, 17, 27 and 38 have also been amended to state that the definition of the terms “aromatic group-containing species” and “aromatic group-containing species” is the same as the definitions of these terms in the corresponding independent claims. With respect to the term “substituted alkyl” and other substituted functional groups, the Examiner agreed that such terms are properly defined in the specification, for example, at page 7, lines 3-29.

Before entry of this amendment, claims 12 and 33 included the limitation that Cx is not phenyl or substituted phenyl. Claims 12 and 33 have been amended such that Cx can be phenyl or substituted phenyl. The specification states (page 6, lines 10-13) that “A can be a covalent bond, with the proviso that when A is so defined, the diazabicyclic ring is not 2,5-diazabicyclo[2.2.1]heptane and/or Cx is not phenyl or substituted phenyl.” Since the ring structure has now been limited to diazabicyclo[3.3.1]nonanes pursuant to a Restriction Requirement, it is now appropriate to revise the definition of Cx.

Election/Restriction Requirement

The claims have been amended as discussed with the Examiner to limit them to diazabicyclo[3.3.1]nonanes.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1, 6, 12, and 33 were rejected under 35 U.S.C. 112, second paragraph, as purportedly being indefinite. The purported indefiniteness relates to the term “heterocyclyl” in claims 1, 6, 12 and 33, and the terms “substituted,” and “aromatic group containing species” in claim 6.

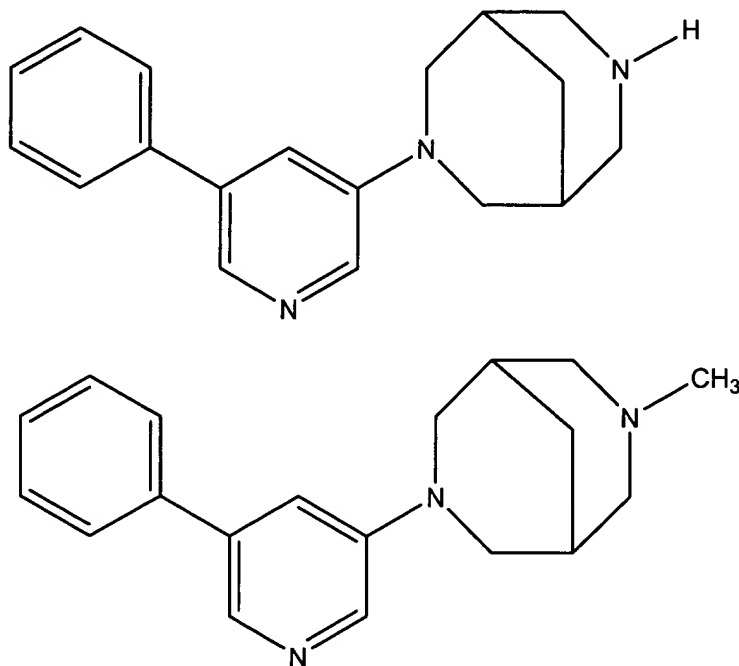
The claims have been amended as suggested by the Examiner to limit the heterocyclic substituents to those specifically mentioned in the specification. The amendment is believed to obviate this ground of rejection.

With respect to the terms “aromatic group-containing species” and “substituted aromatic group-containing species,” claim 6 depends from claim 1, and Applicants believed it was clear that these terms would be defined in claim 6 as they are in claim 1. However, for purposes of clarity, claim 6 has been amended to state that these terms are as defined in claim 1. For purposes of clarity, claims 17, 27 and 38 have been amended in a similar manner.

Rejections Under 35 U.S.C. § 103 (a)

Claims 1-10, 12-31 and 33-42 have been rejected under 35 U.S.C. § 103 (a) as obvious in view of PCT WO 97/40049 to Czollner et al. (“Czollner”). Czollner teaches diazabicyclic compounds which require the presence of an aromatic group or a methyl group at position R22, which corresponds to an attachment to the nitrogen in the presently claimed diazabicyclic compounds that is not attached to Cy. The claims had previously been amended to define the group attached to this ring nitrogen as H, rather than R, and this amendment is still believed to obviate the rejection.

In the Advisory Action mailed in connection with the above-identified application on October 22, 2003, the Examiner acknowledged Applicants arguments that there is a difference in binding between compounds with an N-H or an N-methyl group, but requested a side-by-side comparison of compounds with the same core. Toward that end, Applicants prepared two compounds with the same core, one with the N-methyl moiety taught in Czollner, and one with the N-H moiety in the compounds as claimed. The compounds are listed below:



These compounds were compared, side-by-side, for their ability to bind the nicotinic $\alpha 4 \beta 2$ receptor. In this side-by-side comparison, the N-methyl compound bound to the nicotinic $\alpha 4 \beta 2$ receptor with a K_i of 7.44 nM, whereas the N-H compound bound to the nicotinic $\alpha 4 \beta 2$ receptor with a K_i of 0.18 nM. Thus, there is a significant (i.e., >40 times) improvement in binding between the N-H compounds as claimed and N-methyl compounds in Czollner.

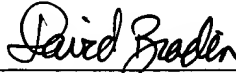
In a telephonic interview with the Examiner held on April 15, 2004, the Examiner indicated that this evidence appeared to be persuasive, but requested an executed Declaration under 37 C.F.R. § 1.132 discussing the evidence. Applicants respectfully request that the obviousness rejection be withdrawn upon submission of an appropriate Declaration under 37 C.F.R. § 1.132, which will be submitted under separate cover.

Conclusion

Applicants respectfully urge that upon entry of the above amendment, claims 1-4, 6-10, 12-25, 27-31, 33-36, and 38-42 are in condition for allowance pending submission of the agreed-upon Declaration under 37 C.F.R. § 1.132. If the Examiner believes that any issues remain unresolved, Applicants respectfully request that Examiner contact the undersigned attorney.

Respectfully submitted,

Date: April 16, 2004



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